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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 24

Serial Number: 07/402,450
Filing Date: September 1, 1989
Appellant(s): George J. Murakawa et al.

93-4018
Edward S. Irons
For Appellant

EXAMINER'S ANSWER

This is in response to appellants' brief on appeal filed on December 1, 1992.

(1) Status of claims.

The statement of the status of claims contained in the brief is correct. This appeal involves claims 18-25 and 31-33.

Claims 18 and 33 have been amended subsequent to the final rejection.

(2) Status of Amendments After Final.

Appellants' statement of the status of the amendment after final rejection contained in the brief is correct. The amendment after final rejection filed on December 1, 1992 has been entered.

(3) Summary of invention.

The summary of invention contained in the brief is correct.

(4) Issues.

Appellants' statement of the issues in the brief is correct.

(5) Grouping of claims.

The rejection of claims 18-25 and 31-33 stand or fall together because appellants' brief does not include a statement that this grouping of claims does not stand or fall together. See 37 C.F.R. § 1.192(c)(5).

(6) Claims appealed.

A substantially correct copy of appealed claims 18 and 33 appears on pages 1 and 3 of the Appendix to the appellants' brief. The minor errors are as follows: Claims 18 and 33 were amended on December 1, 1992, paper No. 20, which was entered by the Examiner on April 4, 1993 paper No. 23 because they were deemed to place to place the application in better form for appeal by materially simplifying the issues for appeal overcoming the rejection rejections under 35 U.S.C. § 112 first and second paragraphs set forth in the final action. Said rejections under 35 U.S.C. § 112 are therefore hereby withdrawn.

(7) Prior Art of record.

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

4,683,195	Mullis et al.	07-28-1987
Nature	Ratner et al.	Vol. 313(2): 277-284 (1985)
EMBO J.	Hennighausen et al.	Vol. 5(6): 1367-1371
J. Virology	Wathen et al.	Vol. 41(2): 462-477 (1982)

No new prior art has been applied in this Examiner's Answer.

(8) Grounds of rejection.

The following grounds of rejection are applicable to the appealed claims.

Claims 18-23 and 31-33 are rejected under 35 U.S.C. § 103 as

being unpatentable over Mullis et al. in view of Ratner et al.

Mullis et al. disclose the amplification of viral RNA in the bridging sentences between columns 7 and 8. Mullis et al. cite the use of both reverse transcriptase and Klenow fragments as agents of polymerization in column 10, lines 7-17. Additionally, column 10, lines 7-9, clearly directs the practitioner to practice either a "system" or "enzymes" to effect extension product synthesis due to the exclusive use of deoxyribonucleotide triphosphates as given in column 9, lines 50-54, as is also the only instantly enabled synthesis method. In the above method is disclosed the alternative adding of either one or two primers so as to facilitate the second strand synthesis from a single stranded target sequence, followed by amplification of both strands by two primers, in column 9, lines 5-49. The whole process is summarized by Mullis et al. in column 2, line 63, through column 3, line 33, wherein the detection step with a labeled probe is cited in column 3, lines 25-27. Mullis et al. is a general but very detailed teaching as to the PCR method.

Ratner et al. give the complete HIV genomic sequence as well as discussion of regions contained therein.

Mullis et al. disclose the practice of PCR which includes the amplification method instantly claimed which can be applied to any organism but does not specifically cite HIV target amplification or the instantly 3'ORF, beta actin, T-7 RNA polymerase, primers and probes. Mullis et al. discuss the amplification of a target which is a portion of a larger molecule in a column 7, lines 47-49. However, in column 8, line 9-19, it

is taught that primer preparation requires only the knowledge of the appropriate target sequences. Ratner et al. disclose the entire HIV genomic sequence which clearly therefore gives the required knowledge for not only many possible primer sequences but probes as well.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to apply the PCR technique of Mullis et al. to HIV amplification and detection because Mullis et al. supply the general technique with a great deal of guidance as to its application and Ratner et al. supplies the sequence information which is the last required data for the use of PCR in HIV amplification and detection. Even though, that Mullis et al. teach simultaneous amplification of more than one sequence at a time at column 10, lines 47-57. The use of an internal standard or control with a measurement or detection technique has been known since quantitative analysis was first practiced. In view of this, one of ordinary skill in the art would have found it prima facie obvious to use a second sequence of RNA to be co-amplified as an internal control with the reasonable expectation, if not certainty, of distinguishing false positive and false negative results.

Claims 24 and 25 are rejected under 35 U.S.C. § 103 as being unpatentable over Mullis et al in view of Ratner et al. as applied to claim 18-23 and 26-30 above, and further in view of Hennighausen et al. and Wathen et al.

Mullis et al. and Ratner et al. have been fully outlined above. Hennighausen et al. give the complete HCMV immediate

early (IE1) genomic sequence as well as discussion of regions contained therein. Wathen et al. give probes that hybridize late HCMV genes as well as a discussion of regions contained therein. As applied above, it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to apply the PCR technique of Mullis et al. to HMCV amplification and detection because Mullis et al. supply the general technique with a great deal of guidance as to its application and Hennighausen et al. and Wathen et al. supply the sequence information which is the last required data for the use of PCR in HCMV (IE) or late regions for amplification and detection. The arguments above regarding use of controls apply to this rejection as well.

Claims 18-25 and 31-33 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 57, 58 and 60 of copending application Serial No. 07/180,740. Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions are directed to detect an RNA virus via PCR methodology with primers and probes of conserved transcript sequences that are known in the prior art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The obviousness-type double patenting rejection is a judicially established doctrine based upon public policy and is primarily intended to prevent prolongation of the patent term by prohibiting claims in a second patent not patentably distinct from claims in a first patent. In re Vogel, 164 USPQ 619 (CCPA 1970). A timely filed terminal disclaimer in compliance with 37

C.F.R. § 1.321(b) would overcome an actual or provisional rejection on this ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 C.F.R. § 1.78(d).

Claims 18-33 are provisionally rejected under 35 U.S.C. § 102(e) as being anticipated by copending application Serial No. 07/180,740.

Copending application Serial No. 07/180,740 has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. § 102(e) if patented. This provisional rejection under 35 U.S.C. § 102(e) is based upon a presumption of future patenting of the conflicting copending application.

This provisional rejection under section 102(e) might be overcome either by a showing under 37 C.F.R. § 1.132 that any unclaimed invention disclosed in the copending application was derived from the inventor of this application and is thus not the invention "by another", or by a showing of a date of invention of any unclaimed subject matter prior to the effective U.S. filing date of the copending application under 37 C.F.R. § 1.131.

(11) Response to argument.

Issues 1 and 2 -- Rejections of claims 18-23 and 31-33 under U.S.C. § 103 over Mullis et al. in view of Ratner; rejection of claims 24 and 25 under 103 over Mullis et al. in view of Ratner et al., Hennighausen et al. and Wathen et al.

Appellants argue that "Mullis et al. do not provide any 'RNA reference sequence' as required by step (ii)(b) of claim 18". This argument is not persuasive. Contrary to appellants' assertion, Mullis et al. disclose the amplification of viral RNA in the bridging sentences between columns 7 and 8. Also, is disclosed the alternative adding of either one or two primers so as to facilitate the amplification second strand target sequence, followed by amplification of both strands by two primers, in column 9, lines 5-49 and column 10, lines 47-57. Examiner agrees

with appellants that Mullis et al. do not mention that one of the two amplified product is used as "reference sequence". However, Mullis et al. do teach using two different primers to simultaneously amplify two different sequences. Use of control to monitor success of analysis is notorious well known in the analytic arts. Appellants further argue that "no method for detecting false positive or negative data is taught or made obvious by Mullis et al.". This is not deemed to be persuasive because this is analysis and interpretation of the resulting product of the two sequences which is an expected result. Appellants' argument that "the claimed invention requires simultaneously PCR amplification of viral RNA sample and at least one synthetic RNA sequence which does not include a preselected target sequence" is not clear because selection of a primer for the PCR process requires knowledge of the sequence to be amplified and knowledge of the sequence is required in order to produce a synthetic RNA sequence that is complementary to the probe in the hybridization of steps (iv) and (v). Furthermore, on page 4, lines 10-16 and page 6, lines 5-8 of the specification appellants refer to T-cell receptor and ß-actin gene sequences as the appropriate positive controls. Finally, appellants argue that "[T]he fact that Ratner et al. may provide HIV sequence information is not material". Examiner must disagree. Ratner et al. supply the entire genomic sequence which clearly therefore gives the required knowledge for not only many possible primer sequences but probes as well which is the last required data for the use of PCR in HIV amplification and detection.

Issues 3 and 4 -- these issues arise under 35 U.S.C. § 112 first and second paragraphs. These issues are moot in view of the concurrently filed amendment under 35 U.S.C. § 1.116(b).

Issue 5 -- Whether claims 18-30 are subject to provisional obviousness-type double patenting rejection over claims 24-53 of copending application Serial No. 07/180,740. This rejection is again apply to claims 57, 58 and 60. Examiner acknowledge that the old claims have been cancelled and amended by the new claims.

CONCLUSION

It is respectfully submitted that the rejection of all claims in this application is correct and proper for the reasons noted above, that appellants have shown no evidence of unobviousness, and that the rejection of all claims should be affirmed. For the above reasons, it is believed that the rejections should be sustained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miguel H. Escallon, Ph.D. whose telephone number is (703) 308-0376.

M.H.E.

April 14, 1993.

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